FIG. 1

FIG. 2
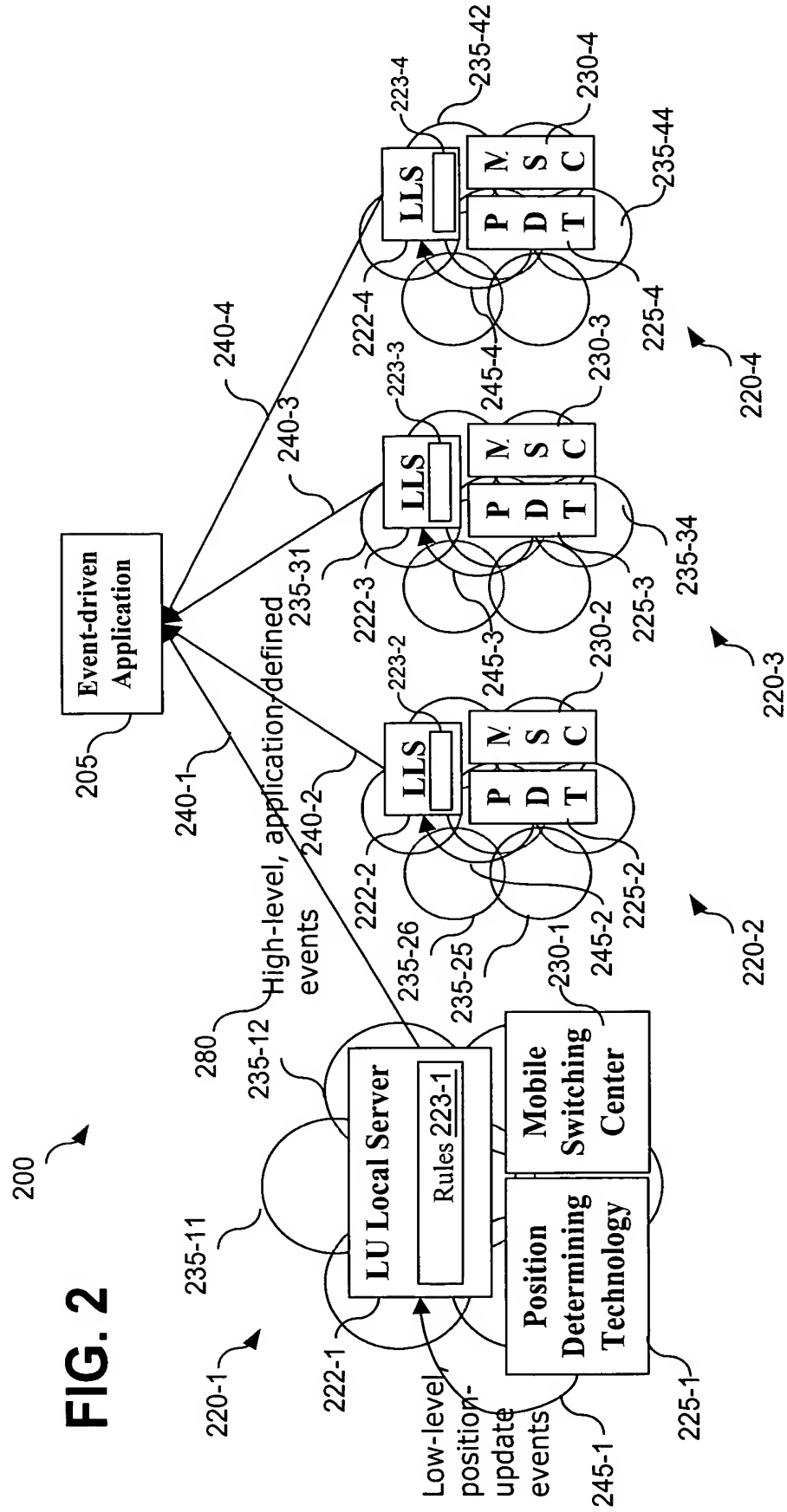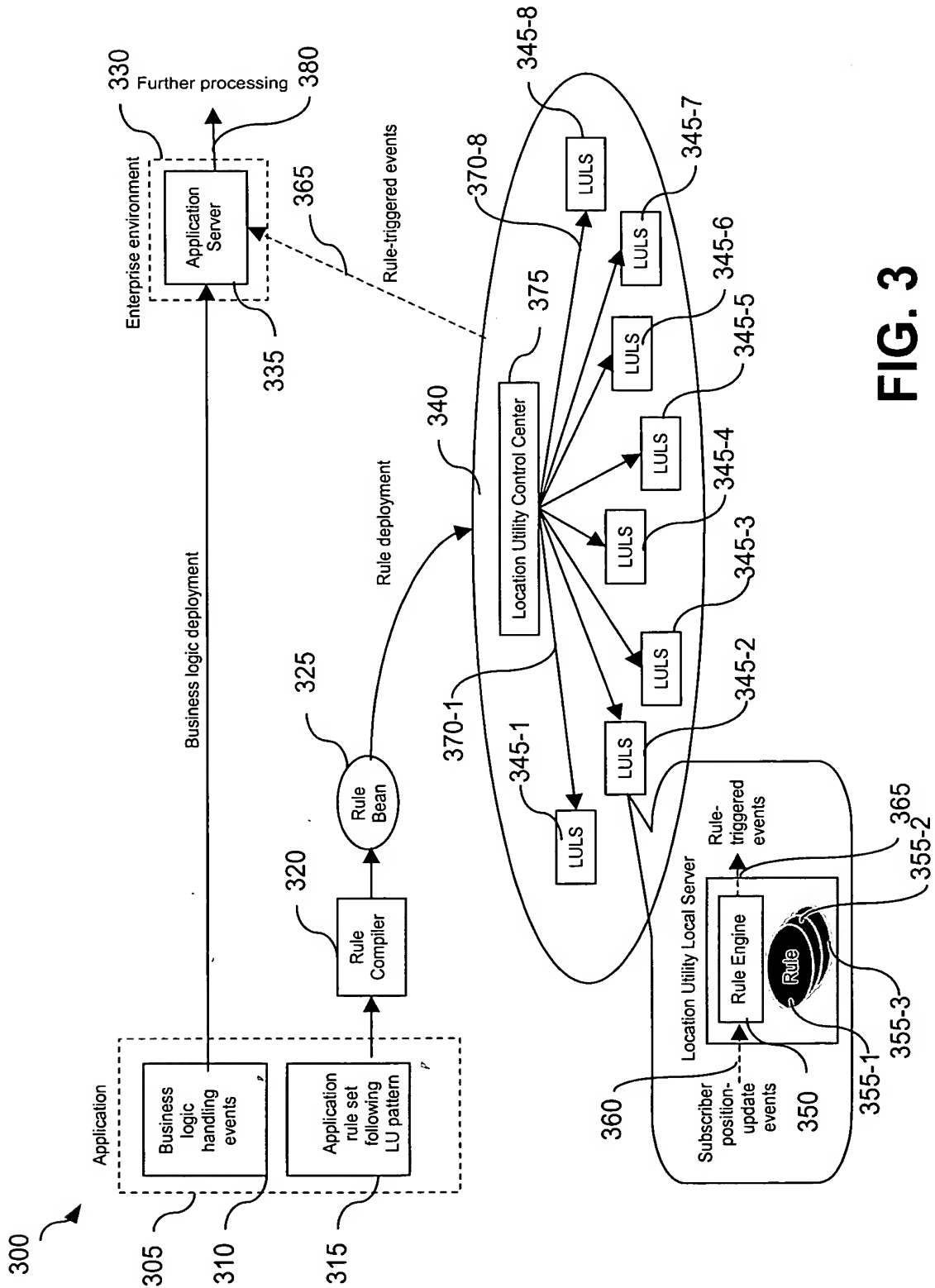
FIG. 3

spatial_rule → rule_expr

rule_expr → rule_expr **OR** rule_expr
    | rule_expr **AND** rule_expr
    | **NOT** rule_expr
    | rule_func

rule_func → **containedIn** {polygon | polygonClass+}
    | **withinDistanceOf** entity distance
    | **hasIdentity** {subscriber | subscriberClass+}
    | scalar_func {< | <= | == | != | >= | >} scalar_func
    | **timer** period {subscriber | subscriberClass+}

polygon → *representation of a polygon*

subscriber → *string literal*

entity → subscriber | subscriberClass+ | point | pointClass+

distance → scalar_func

point → *representation of a point*

scalar_func → **SPRField** component
    | **distanceFrom** {subscriber | point}
    | **distanceTraveledSince** {point | time} {route | path}
    | **constant** *numeric literal*
    | **reference** resourceID

component → X | Y | Z | SPEED | BEARING| TIME | ...
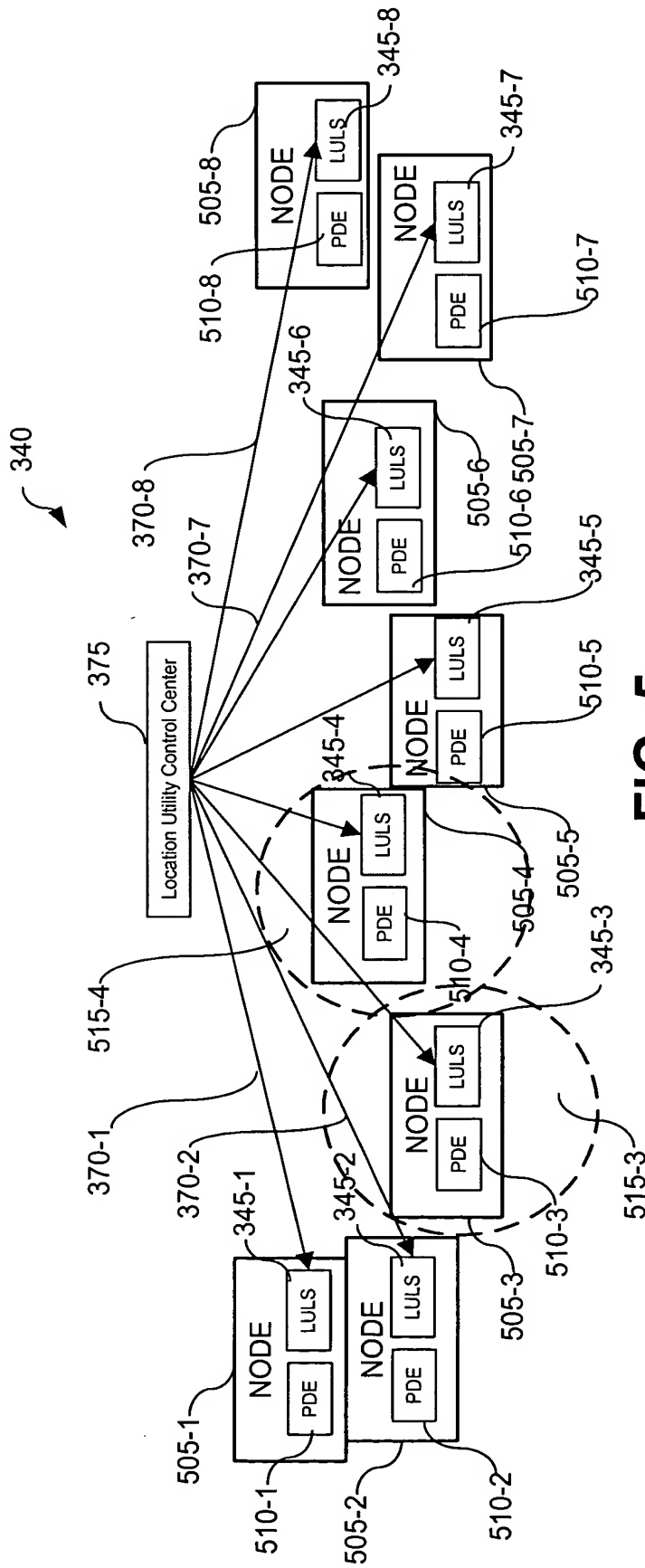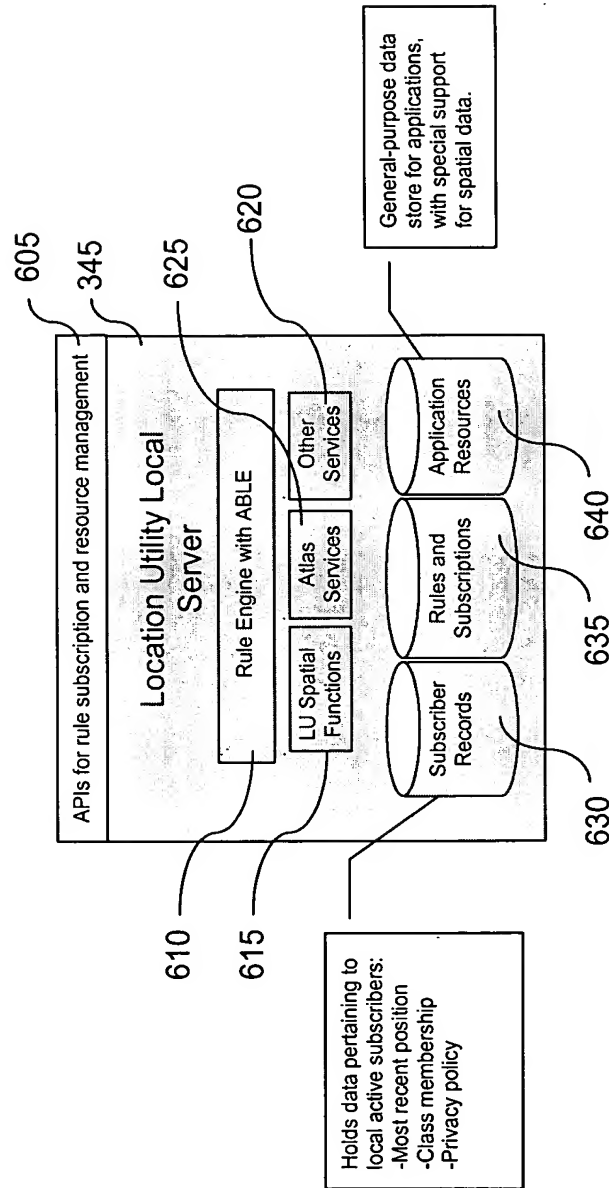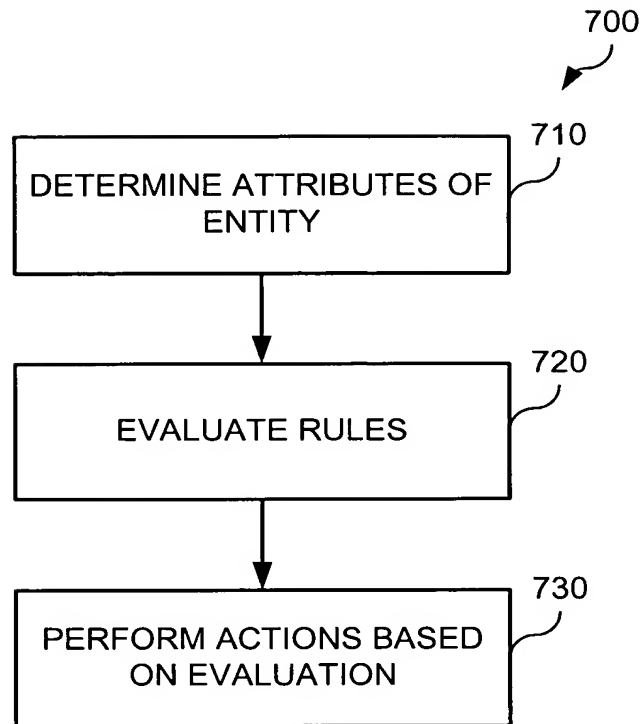
resourceID → *string literal*

FIG. 4

FIG. 5

APIs for rule subscription and resource management — 605

345

Location Utility Local Server

Rule Engine with ABLE — 610

LU Spatial Functions — 615

Atlas Services — 625

Other Services — 620

Subscriber Records — 630

Rules and Subscriptions — 635

Application Resources — 640

General-purpose data store for applications, with special support for spatial data.

Holds data pertaining to local active subscribers:
-Most recent position
-Class membership
-Privacy policy

FIG. 6

700

DETERMINE ATTRIBUTES OF
ENTITY
710

EVALUATE RULES
720

PERFORM ACTIONS BASED
ON EVALUATION
730

FIG. 7

800

COMPUTER SYSTEM

810

PROCESSOR

820

MEMORY

830

NETWORK
INTERFACE

840

MEDIA
INTERFACE

NETWORK

MEDIUM

860

870

FIG.8